PATENT COOPERATION TREATY

PCT 10/535720

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2002P18326WO	**FOR FURTHER ACTION** See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2003/003615	International filing date (*day/month/year*) 30 October 2003 (30.10.2003)	Priority date (*day/month/year*) 21 November 2002 (21.11.2002)

International Patent Classification (IPC) or national classification and IPC G06F 17/50, 9/44, 17/60

Applicant	SIEMENS AKTIENGESELLSCHAFT

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of _____7_____ sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   I ☒ Basis of the report

   II ☐ Priority

   III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   IV ☐ Lack of unity of invention

   V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI ☐ Certain documents cited

   VII ☐ Certain defects in the international application

   VIII ☐ Certain observations on the international application

Date of submission of the demand 21 May 2004 (21.05.2004)	Date of completion of this report 14 December 2004 (14.12.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

Form PCT/IPEA/409 (cover sheet) (July 1998)

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages   1-16   , as originally filed

pages   , filed with the demand

pages   , filed with the letter of

☒ the claims:

pages   1-26   , as originally filed

pages   , as amended (together with any statement under Article 19

pages   , filed with the demand

pages   , filed with the letter of

☒ the drawings:

pages   1/3-3/3   , as originally filed

pages   , filed with the demand

pages   , filed with the letter of

☐ the sequence listing part of the description:

pages   , as originally filed

pages   , filed with the demand

pages   , filed with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language   which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/ or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

     ☐ the description, pages _____

     ☐ the claims, Nos. _____

     ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V.	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.   Statement

Novelty (N)	Claims	1-26		**YES**
	Claims			**NO**
Inventive step (IS)	Claims			**YES**
	Claims	1-26		**NO**
Industrial applicability (IA)	Claims	1-26		**YES**
	Claims			**NO**

2.   Citations and explanations

This report makes reference to the following documents:

D1:   HILDING ELMQVIST: "A UNIFORM ARCHITECTURE FOR
       DISTRIBUTED AUTOMATION" ADVANCES IN
       INSTRUMENTATION AND CONTROL, INSTRUMENT
       SOCIETY OF AMERICA, RESEARCH TRIANGLE PARK,
       US, Vol. 46, No. PART 2, 1991, pages 1599-
       1608, XP000347589 ISSN: 1054-0032

D2:   US-B-6 369 8411 (WITTE MANFRED ET AL) 9 April
       2002 (2002-04-09)

D3:   THOMPSON M B: "AutoMod II: The System Builder"
       PROCEEDINGS OF THE 1989 WINTER SIMULATION
       CONFERENCE, 4 December 1989 (1989-12-04),
       pages 235-242, XP010305701

D4:   BENJAAFAR S: "Design of manufacturing plant
       layouts with queuing effects" ROBOTICS AND
       AUTOMATION, 1998. PROCEEDINGS. 1998 IEEE
       INTERNATIONAL CONFERENCE ON LEUVEN, BELGIUM
       16-20 May 1998, NEW YORK, NY, USA, IEEE, US,
       16 May 1998 (1998-05-16), pages 260-265,
       XP010281102 ISBN: 0-7803-4300-X

D5:   WO 97/15877 A (LENG HELMUT; ZINK THOMAS (DE);
       JUNG HERBERT (DE); REITER HERMANN (DE) 1 May
       1997 (1997-05-01)

D6:   US 2002/047865 A1 (LINGSCHEID VICTOR ET AL) 25

April 2002 (2002-04-25)

D7:   JUDD R P ET AL: "Manufacturing system design
        methodology: execute the specification" RAPID
        SYSTEM PROTOTYPING, 1990. SHORTENING THE PATH
        FROM SPECIFICATION TO PROTOTYPE, FIRST
        INTERNATIONAL WORKSHOP ON RESEARCH, TRIANGLE
        PARK, NC, USA 4-7 JUNE 1990, LOS ALAMITOS, CA,
        USA, IEEE COMPUT. SOC, US, 4 June 1990 (1990-
        06-04), pages 97-115, XP010024369 ISBN: 0-
        8186-2175-3

D8:   CHEN M ED - MUDGE T N ET AL: "CASE data
        interchange format (CDIF) standards:
        introduction and evaluation" SYSTEM SCIENCES,
        1993, PROCEEDINGS OF THE TWENTY-SIXTH HAWAII
        INTERNATIONAL CONFERENCE ON WAILEA, HI, USA 5-
        8 JAN. 1993, LOS ALAMITOS, CA, USA, IEEE, US,
        5 January 1993 (1993-01-05), pages 31-40,
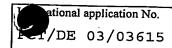   XP010031619 ISBN: 0-8186-3230-5.

1. Novelty and inventive step

1.1   The solution proposed in claim 1 of the present
        application is not inventive for the following
        reasons (PCT Article 33(3)):

        D1, which is regarded as the closest prior art,
        discloses (using, to the extent possible, the
        wording of claim 1 of the present application, the
        references in parentheses referring to D1) a

        •   system for the layout-oriented detection of
                information relevant to control (abstract
                "graphical programming environment",
                "automation system", "graphical layout",
                "Keywords: [...] Process Control Systems"),

with

- first means for the graphical representation of structures consisting of individual physical components (page 1605, fourth paragraph "structured graphical editor", page 1600, third paragraph "units within a distributed control system"), and

- second means for the graphical establishment of at least one directional relationship among the components of the structures described (page 1600, paragraph 4 "graphically connecting pre-defined modules").

The subject matter of claim 1 differs therefrom by the explicit mention of third means for specifying control-relevant connection of the components as a function of the relationships established.

It is obvious to a person skilled in the art, however, that in the compilation described on page 1605, fifth paragraph of D1, reference is made to the relationships established for connecting the components (see, *inter alia*, the example "tank system" on page 1601, paragraph 12 to page 1605, first paragraph and figures 1-3). Therefore, in implementing the method described in D1, a person skilled in the art would arrive at the solution described in claim 1 without thereby being inventive.

N.B.:

D2 (abstract "programmable controller", "graphical link between the nodes and a controlsystem link between the interfaces which the nodes represent";
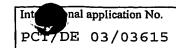
figure 13) also discloses the programming of a control system by graphical input of objects and relationships, and therefore claim 1 appears not to involve an inventive step.

Likewise, D3 (abstract "AM II's CAD features are used to define the physical geometry of manufacturing, material handling", "AM II's powerful graphical interface accurately captures the physical constraints of distance, size, and space", "a substantial portion of the underlying model logic is generated for the user from the graphics") discloses the graphical input of a manufacturing and control system with the graphical establishment of directional relationships by inputting conveyors between the stations (page 236, column 2, fifth paragraph to page 237, column 1, first paragraph) that represent a material flow relationship. Therefore, it also appears from D3 that claim 1 lacks an inventive step.

1.2   Claim 2 is not inventive (PCT Article 33(3)) because D1 relates to an automation system for process control, *inter alia* (D1, abstract "automation system", "Keywords: [...] Process Control").

1.3   Claim 3 is not inventive (PCT Article 33(3)) because it is standard procedure to establish a model library whose models have their own characteristics and interfaces; see, for example D1 (abstract "library objects").

1.4   Claim 4 is not inventive (PCT Article 33(3)) because, in object-oriented programming, connection usually takes place via data interfaces of the

objects when, as in D1 (abstract), the "cooperation of distributed objects" is to be implemented".

1.5   Claim 5 is not inventive (PCT Article 33(3)) because the relationships among components of a process control system usually correspond to the flows associated therewith, whether the flow is a data flow (as in D1, abstract, for example), energy, electric, material or other type of flow. Therefore, the information flow in D1 (page 1601, paragraph 7) between each set of two graphically connected components can contain several components in both directions, and therefore all of the desired flows can be shown using the same abstract mechanism.

1.6   Claim 6 is not inventive (PCT Article 33(3)) because it is obvious that the information flow runs opposite the material flow, when, for example, a component sends a material request to a component that supplies it. See also D7 (page 104, paragraph 10 "a machine controller sends a signal to a part loader that it is ready for another part").

1.7   Claim 7 is not inventive (PCT Article 33(3)) because a person skilled in the art is familiar with the use of distances for determining optimal relationships (for example, delivery relationships in the material flow, the shortest path between components); see, for example D3 (abstract, "AM II's powerful graphical interface accurately captures the physical constraints of size, distance, and space", "set of expert-based movement systems", page 237, column 2, first paragraph "automatically calculates the shortest path between control points") or D4 (page 261, column 1, third paragraph "minimizing the

average distance traveled by an arbitrary unit load of material").

1.8　　Claim 8 is not inventive (PCT Article 33(3)) because a person skilled in the art is familiar with the use of local information from the layout; see, for example D3 (Abstract "AM II's powerful graphical interface accurately captures the physical constraints of distance, size, and space").

1.9　　Claims 9-13 are not inventive (PCT Article 33(3)) because the layout-oriented addition of further characteristics to components, the grouping of, for example, adjacent components into·groups, the definition of value ranges and the generation of a network configuration are obvious options that a person skilled in the art would select according to the circumstances, without thereby being inventive.

1.10　Claims 14-26 lack an inventive step for the same reasons as claims 1-13 (PCT Article 33(3)).